Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CAMERON PHILIP WILLIAMS

Appeal No. 2003-0558
Application No. 09/477,601

HEARD: JULY 16, 2003

Before ABRAMS, STAAB, and BAHR, Administrative Patent Judges.

STAAB, Administrative Patent Judge.

DECISION ON APPEAL

Cameron Philip Williams appeals from the examiner's final rejection of claims 1-10 and 12-14, all the claims currently pending in the application.

We reverse.

Appellant's invention pertains to a method of (claims 1-8) and system for (claims 9, 10 and 12-14) redistributing driving torque between front and rear driving wheels of a

vehicle. An understanding of the invention can be derived from a reading of representative claims 1 and 9, which appear in the appendix to appellant's brief.

The references applied in the final rejection are:

Fanti et al. (Fanti)	4,714,127	Dec. 22, 1987
Taga et al. (Taga)	4,768,609	Sep. 6, 1988

Claims 1-5, 7-10 and 12-14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Taga.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Taga in view of Fanti.

Reference is made to appellant's brief (Paper No. 13) and to the examiner's final rejection and answer (Paper Nos. 7 and 14) for the respective positions of appellant and the examiner regarding the merits of these rejections.

Discussion

We take up first for consideration the examiner's rejection of claims 1 and 9, the two independent claims on appeal, as being anticipated by Taga.

Method claim 1 includes the steps of determining a vehicle condition corresponding to load, *comparing* the determined vehicle condition to a predetermined value, wherein if the determined vehicle condition *exceeds* the predetermined value, a high load condition exists, and redistributing driving torque between the front and rear wheels, when the determining step determines that a high load condition exists.

System claim 9 is directed to a system comprising, among other things, a controller that includes a *comparator* for *comparing* a sensed vehicle parameter from a vehicle sensor, corresponding to a vehicle load, with a predetermined value and, if the sensed vehicle parameter *exceeds* the predetermined value, a high load condition exists and the driving torque is redistributed between the front and rear wheels.

Taga, the reference alleged by the examiner to anticipate claims 1 and 9, is directed to a control device and method for limiting torque on front wheels or rear wheels of a four wheel drive vehicle. As explained in the abstract (with reference numerals added), Taga's four wheel drive power transmission

> has a center differential device [10] for distributing rotational power [Ti] supplied from an engine [1] to a front wheel propeller shaft [26] and a rear wheel propeller shaft [24] at a variable torque dividing ratio therebetween, and a mechanism [21, 22] for controlling the center differential device so as to vary the torque dividing ratio according to the magnitude of the torque of the rotational power [Ti] supplied from the engine so that the torque dividing ratio is varied toward a decreased ratio for one of the front and rear wheel propeller shafts and an increased ratio for the other of the front and rear wheel propeller shafts as the magnitude of torque [Ti] of the rotational power supplied from the engine increases. The torque [Tf] loaded on one of the front and rear wheel propeller shafts is maintained not to exceed a determinate value [Tmax] as torque [Ti] increases.

As set forth at col. 15, lines 7-38, the torque transfer capacity Tc of the center differential device 10 is controlled in accordance with the formula

$$Tf = \left(\frac{p}{1 + p}\right)(Ti) + Tc \leq Tmax$$

where Tf, Ti, Tc and Tmax are as defined above and p is the ratio of the number of teeth on the ring gear 14 to the number of teeth on the sun gear 13 of the differential 10. The term (p/(1+p))Ti of the above formula is the power distribution ratio between the front and rear drives shafts when the center differential device 10 operates freely (i.e., when its internal clutch 21 is in the released condition) and the term Tc of the formula is a variable that represents the amount of torque additionally transferred to each of the front and rear drive shafts as a result of partial or full engagement of the internal clutch 21. Control of Tc in this way assures that the torque Tf supplied to the front wheels of the vehicle does not exceed Tmax, which is the maximum torque that is considered to be appropriate to supply to the front wheels of the vehicle (col. 15, lines 24-27).

In finding correspondence between the method and system of Taga and claims 1 and 9, the examiner appears to take the position (see final rejection, page 3) that col. 13, lines 59-60 of Taga discloses a mode of operation and structure that correspond to the comparing step of claim 1 and the comparator structure of claim 9. In addition, in responding to arguments presented by appellant in the brief, the examiner seems to take the position (answer, pages 4-5) that Taga compares the torque Tf on the front axle to the determinative value Tmax, and that this act reads on the comparing step of claim 1 (and presumably the comparator structure of claim 9). For the reasons that follow, we cannot accept these positions.

The above cited portion of Taga's specification states that the torque transmission capacity Tc of the clutch 21 of the center differential device 10 is controlled

> according to the value of the input torque Ti input to said four wheel drive power transfer device 3 from the automatic speed change device 2. In other words, *as said torque Ti* input to said four wheel drive power transfer device 3 *increases, the transmission control device 45 controls the torque transmission capacity Tc* of the clutch 21 of the center differential device 10 *to decrease it*. [Col. 13, lines 57-64; emphasis added.]

While we are in accord with the examiner's implied position that Taga's step of sensing the input torque Ti input to the power transfer device 3 and/or determining the torque Tf applied to the front axle may be read on the determining step of claim 1, it is not apparent to us, and the examiner has not explained, where Taga discloses *comparing* said determined vehicle condition (Ti of Tf) to a predetermined value, such as Taga's torque value Tmax, in order to ascertain if the determined vehicle condition (Ti to Tf) *exceeds* the predetermined value, as required by the comparing step of claim 1. As we see it, Taga simply senses Ti and utilizes it to decrease Tc when Ti increases without regard to whether or not Ti exceeds a predetermined value such as Tmax. Suffice it to say, this does *not* equate to the comparing step of claim 1, which requires *comparing* a determined vehicle condition to determine if it *exceeds* a predetermined value.

As to the examiner's statement in the paragraph spanning pages 4-5 of the answer, even if we were to agree with the examiner that the mode of operation described by Taga

at col. 13, lines 50-64, and elsewhere in the specification can be construed as reading on the determining step of claim 1, Taga does not compare any determined vehicle condition (e.g., Ti or Tf) to a predetermined value, such as Tmax, as implied by the examiner in asserting that Taga's method of operation includes steps that correspond to the comparing step of claim 1.

For these same reasons, the examiner has not explained, and it is not apparent to us, how Taga anticipates the above noted limitation appearing in the last paragraph of claim 9 directed to the comparator of the claimed system. In this regard, the examiner's statement that "the remaining structural limitations in claim 9 are conventional in the art and cited in the original rejection" (answer, page 5) does not suffice.

In light of the foregoing, we must agree with appellant's argument at the top of page 8 of the brief to the effect that Taga does not respond to the limitations of claims 1 and 9 setting forth that torque redistribution does not occur until the determined vehicle condition exceeds a predetermined value. It follows that we cannot sustain the standing rejection of claims 1 and 9, as well as claims 2-5, 7, 8 and 10-14 that depend therefrom, as being anticipated by Taga.

As to the standing rejection of claim 6 as being unpatentable over Taga in view of Fanti, we appreciate that Fanti discloses a control device for a vehicle with a disengageable four wheel drive, wherein the control device may compare vehicle acceleration to a stored value to disengage one of the sets of wheels from the drive train. It is not apparent to us, and the examiner has not adequately explained, how this teaching could be incorporated into the overall scheme of Taga to arrive at the claimed subject matter as a whole. Accordingly, we also cannot sustain the standing rejection of claim 6 as being unpatentable over Taga in view of Fanti.

The decision of the examiner is reversed.

REVERSED

NEAL E. ABRAMS Administrative Patent Judge	)
LAWRENCE J. STAAB Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
JENNIFER D. BAHR Administrative Patent Judge	)

LJS/dal

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